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10/706,805

11/12/2003

Erol Bozak

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EXAMINER

KAWSAR, ABDULLAH AL

ART UNIT

PAPER NUMBER

2195

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/706,805

**Applicant(s)**

BOZAK ET AL.

**Examiner**

Abdullah-Al Kawsar

**Art Unit**

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. Claims 1-20 are pending.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Design and Evaluation of a Resource Selection Framework for Grid Applications” by Chuang Liu(Liu), in view of “ Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid” by Rajkumar Buyya(Buyya).

4. Liu and Buyya were cited in the last office action.

5. As per claim 1, Liu teaches the invention substantially as claimed including a method comprising:

in a network, responding to a request for a computational resource to begin computing a task by sending a list of computational resources ( page 2, col 1, lines 32-36, “The resource selector ,....., if any are available.”);

receiving a selection of a computational resource for reservation ( page 3, col 2, lines 19-27, “The algorithm repeatedly removes the “best” resource remaining..... that satisfies the user’s request”);and

sending the request to a different portion of the network if computational resources are unavailable to begin computing the task ( page 4, col 2, lines 49 through page 5, col 1, lines 1-14 “Line 10 specifies the resource constraints..... smallest execution time has the highest rank.).

Liu does not specifically disclose, if the selection of the computational resource is available to begin computing the task, reserving the selection and sending a reservation number for the selection.

However, Buyya teaches if the selection of the computational resource is available for computing the task, reserving the selection and sending a reservation number for the selection ( page 3, col 2, lines 19-23, “the user can negotiate ..... in order to identify suitable resources”); and

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Buyya into the method of Liu to have a reservation number for the selected resources. The modification would have been obvious because one of the ordinary skills of the art would identify the selected reserved resources for better resource allocation and management over the network.

6. As per claim 2, Liu teaches wherein the list of computational resources comprises network addresses of the computational resources ( page 5, col 1, lines 16-27, “ the result returned..... </virtual machine>”).

7. As per claim 3, Buyya teaches reserving the selection further comprises assigning the reservation number ( page 3, col 2, lines 22-23, "The system can ..... suitable resources.").

8. As per claim 4, Liu teaches waiting a predetermined time period for the computational resource to begin computing the task ( page 4, col 2, lines 11-12, " An asynchronous request .....request lifetime value"); and

if the predetermined time period is expired and the computational resource has not begun computing the task, then freeing the computational resource for subsequent reservation for computing a second task ( page 4, col 2, lines 11-15, "An asynchronous request ..... during the specified lifetime.").

9. As per claim 5, Liu teaches responding to the request further comprises comparing requirements for computing the task with specifications of the available computational resources ( page 3, col 2, lines 29-36, "It checks whether the candidate ClassAd..... can be described by expressions").

10. As per claim 6, Liu teaches further comprising generating a list of computational resources by querying a portion of the network ( page 4, col 1, lines 24-25, "it is responsible for querying MDS .....in local memory")

11. As per claim 7, Liu teaches the invention substantially as claimed including a method comprising:

in a network, sending, by a first service, a request for a list of one or more computational resources that are available to begin computing a task (page 2, col 1, lines 5-10, "condor [21] provides..... appropriate resources");

responding, by a second service, to the request by collecting information on computational resources (page 3, col 1, lines 33-35, "The set-matching..... has highest rank");

sending a list of available computational resources (page 2, col 1, lines 32-36, "The resource selector ....., if any are available.");

receiving a selected computational resource for reservation ( page 3, col 2, lines 19-27, "The algorithm repeatedly ..... that satisfies the user's request"); and

sending the request to begin computing the task, to a third service if the second service has no information on available computational resources ( page 4, col 2, lines 49 through page 5, col 1, lines 1-14 "Line 10 specifies the resource constraints..... smallest execution time has the highest rank".).

Liu does not specifically disclose reserving the selected computational resource and sending reservation number of the selected computational resource if the selected computational resource is available to begin computing the task.

However, Buyya teaches reserving the selected computational resource and sending reservation number of the selected computational resource if the selected computational resource is available to begin computing the task ( page 3, col 2, lines 19-23, "the user can negotiate for resources ..... order to identify suitable resources"); and

12. As per claims 8 – 11, they have the similar limitations as of claims 2 - 5 above.

Therefore, they are therefore rejected under the same rational of claims 2 - 5 above.

13. As per claim 12, Buyya teaches wherein the second service has a stored relation to the first service ( page 2, col 3, lines 19-24, “it is possible to run ..... or different user”).

14. As per claim 13, Liu teaches wherein the first service executes instructions on a first computer system and the computational resources managed by the first service comprise a first set of computational resources located on the first computer system ( page 2, col 1, lines 26-36, “Within this framework ..... resources, if any are available.”).

15. As per claim 14, Liu teaches wherein the third service has a stored relation with the first service, the third service executes instructions on a second computer system, and the computational resources that are described by information accessible to the first service further comprise a second set of computational resources that are described by information accessible to the third service ( page 8, col 1, lines 25-34; col 2, lines 1-13).

16. As per claim 15, Liu teaches the invention substantially as claimed including a network comprising:

a first computer system having a first set of one or more computational resources and configured to execute instructions of a first service ( page 8, col 2, lines 11-19, "these machines are connected..... and {o, salitimbanco}.ucsd.edu."); and

a second computer system configured to execute instructions of a second service, the first service configured to ( page 8, col 2, lines 11-19, "these machines are connected..... and {o, salitimbanco}.ucsd.edu.");

respond to a request for a list of computational resources to begin computing a task by collecting information on at least the first set of one or more computational resources (page 3, col 1, lines 33-35, "The set-matching..... has highest rank");

send a list comprising a subset of the first set of the one or more computational resources ( page 2 col 1 lines 32-36, "The resource selector ....., if any are available.");

receive a selection of a computational resource for reservation ( page 3, col 2, lines 19-27, "The algorithm repeatedly ..... that satisfies the user's request"); and

send the request to the second service if computational resources are unavailable to begin computing the task (page 4, col 2, lines 49 through page 5, col 1, lines 1-14 "Line 10 specifies the resource constraints..... smallest execution time has the highest rank.").

Liu does not specifically disclose, reserve the selection and send an address of the selection if the selection of the computational resource is available to begin computing the task.

However, Buyya teaches reserve the selection and send an address of the selection if the selection of the computational resource is available to begin computing the task ( page 3, col 2, lines 19-23, "the user can negotiate for resources in the grid and find out if the job can be



performed. The system can employ resource reservation or a trading technique in order to identify suitable resources”)

17. As per claim 16, it has similar limitations as of claims 14 above. Therefore, it is rejected under the same rational as of claim 14 above.

18. As per claims 17 – 20, they have similar limitations as of claims 3 - 5 above. Therefore, they are therefore rejected under the same rational as of claims 3-5 above.

#### ***Response to Amendment***

19. Applicant’s arguments in respect to claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: The Cactus Worm: Experiments With Dynamic Resource Discovery and Allocation In A Grid Environment; Gabrielle Allen; The International Journal of High Performance Computing Applications, Volume 15, No. 4, Winter 2001.

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this office action. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

22. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdullah-Al Kawsar whose telephone number is 571-270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

24. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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25. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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